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SOME PARTICULARS

ABOUT

DAIRYING IN THE NETHERLANDS

for the Members of the

BRITISH DAIRY FARMERS' ASSOCIATION.

EXCURSION MAY 1911.

THE HAGUE,
VAN LANGENHUYSEN BROTHERS.
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5

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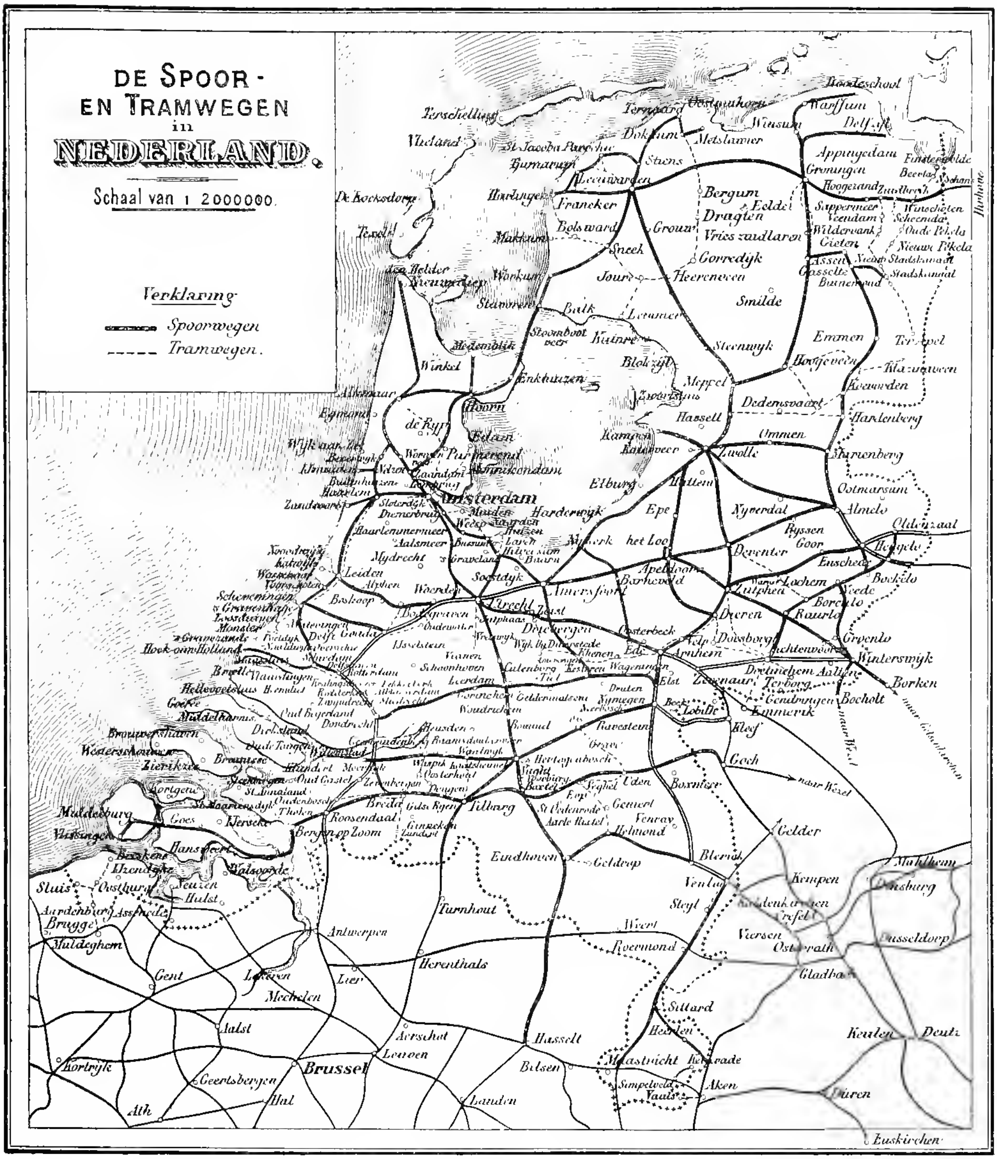
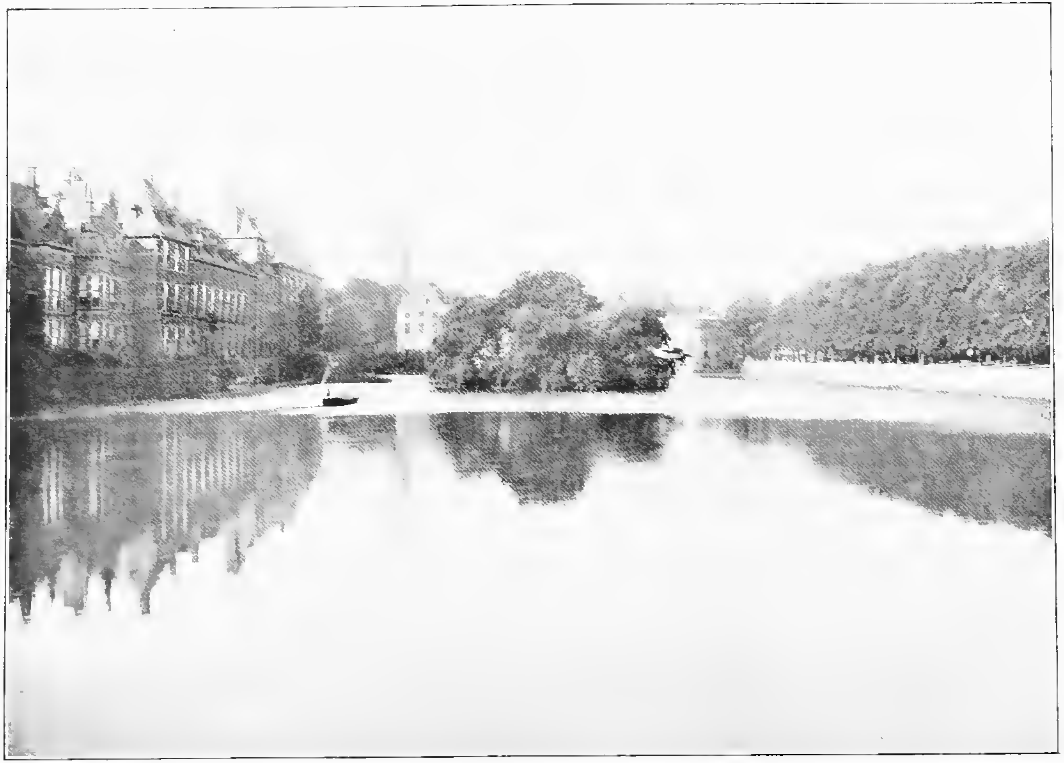


DE SPOOR- EN TRAMWEGEN in NEDERLAND.

Schaal van 1 2000000.



The Court-Pond at The Hague.

INTRODUCTION.

This booklet has been written for the use of the members of the British Dairy Farmers Association, visiting the Netherlands in the month of May 1911 under the guidance of Dr. v. Rijn, Netherland Agricultural Commissioner for Great-Britain and Ireland. It contains a short description of some places to be visited and also full particulars about the principal measures for protecting the Dairy-Industry.

PRODUCTION AND EXPORT OF BUTTER.

In addition to the particulars in the paper about the Dairy-Industry in The Netherlands, to be read at the meeting on the 23rd of May, some figures are given here, showing the exact development and distribution of this industry over the country.

The total production of butter in The Netherlands:

for 1908 is estimated at . . . 64 000 tons.
„ 1906 „ „ „ . . . . 60 000 „
„ 1903 „ „ „ . . . . 59 000 „

The destribution over the different provinces was in 1908 in thousands of tons:

Friesland.	Groningen.	Drente.	Overijssel.	Gelderland.	Utrecht.	Northholland.	Southholland.	Zeeland.	Northbrabant.	Limburg.	In margarine works.	Total.
15,5	2,3	4,3	7,0	8,4	1,3	2,9	5,4	1,3	9,0	5,8	1,0	64

Out of these 64 000 tons, 44 500 tons were made in creameries and the remaining quantity on the farms.

The size of the creameries and the destribution over the different provinces for 1908 is shown in the following tabel:

Annual production.	Number of Steamcreameries. less than 50 tons.	Number of Steamcreameries. from 50 to 150 tons.	Number of Steamcreameries. over 150 tons.	Number of Handpowercreameries. less than 10 tons.	Number of Handpowercreameries. from 10 to 20 tons.	Number of Handpowercreameries. over 20 tons.	Total.
Friesland . . .	15	74	35	2	1	—	127
Groningen . . .	32	13	1	3	—	1	50
Drente	25	28	2	12	17	5	89
Overyssel	33	31	4	3	4	4	79
Gelderland	34	29	11	22	5	2	103
Utrecht	14	2	1	—	1	—	18
Northholland	35	2	3	1	—	—	41
Southholland	26	10	3	7	1	—	47
Zeeland	9	1	—	1	1	—	12
Northbrabant . . .	29	34	—	54	70	33	220
Limburg	18	17	—	57	44	5	141
Total	270	241	60	162	144	50	927

In 1908. The quantity of butter made in:

steam creameries was.	39 841 tons
and in handpower creameries. .	4 618 „

In 1908. The quantity of butter made in:

cooperative creameries was. . . .	33 165 tons
private creameries was	11 295 „

The principal countries to which butter from The Netherlands is exported are Great-Britain, Germany, Belgium and France. The relative quantities sent to these countries vary considerably, and are regulated by the net-prices we can obtain.

In 1902 we sent to Great-Britain about 14 700 tons out of a total of 22 869 tons and only 4731 tons to Germany and 2153 tons to Belgium. How this has gradually altered may be seen from the following tabel:

EXPORT OF BUTTER FROM THE NETHERLANDS.

Quantities in tons.

COUNTRIES OF DESTINATION.	1902	1903	1904	1905	1906	1907	1908	1909	1910
Total . .	22861	23428	23607	23207	25585	29397	33072	31156	32809
Great-Britain . .	14774	12916	9597	8515	8873	8306	12654	7782	8288
Germany	4731	6392	9604	10302	10705	14117	13593	16000	16836
Belgium	2153	2943	3117	3293	4646	5680	5509	5982	6271

The average price realised for Dutch butter in 1909 was £ 3.9.3 per cwt.

PRODUCTION AND EXPORT OF CHEESE.

The total quantity of cheese made in Holland in 1908 was about 82 000 tons.

The approximate figures for cheese made in factories and on the farms in the different provinces are:

	1908.	
	Made in factories or creameries.	Made on the farms.
Friesland	28 875	100 tons
Groningen	1 011	— „
Drente	—	— „
Overyssel	700	20 „
Gelderland	200	225 „
Utrecht	100	11 115 „
Northholland	8 434	10 510 „
Southholland	900	19 330 „
Zeeland	30	— „
Northbrabant	250	10 „
Limburg	—	115 „
	40 500	41 425 tons
	81 925	

Out of this quantity

about 30 000 tons were full cream Gouda and Edam;
20 000 „ „ fat Gouda and Edam;
9 000 „ „ different sorts of seed-cheese.
1 400 „ „ Cheddar and Cheshire.
21 515 „ „ cheese from partly skimmed milk in Edam and Gouda shape.

The full cream Gouda and Edam Cheese as well as the half meat cheese in Gouda and Edam shape are sent all over the world, but the most important customers are again Great-Britain, Germany, France and Belgium. The actual figures for the destribution were for 1910.

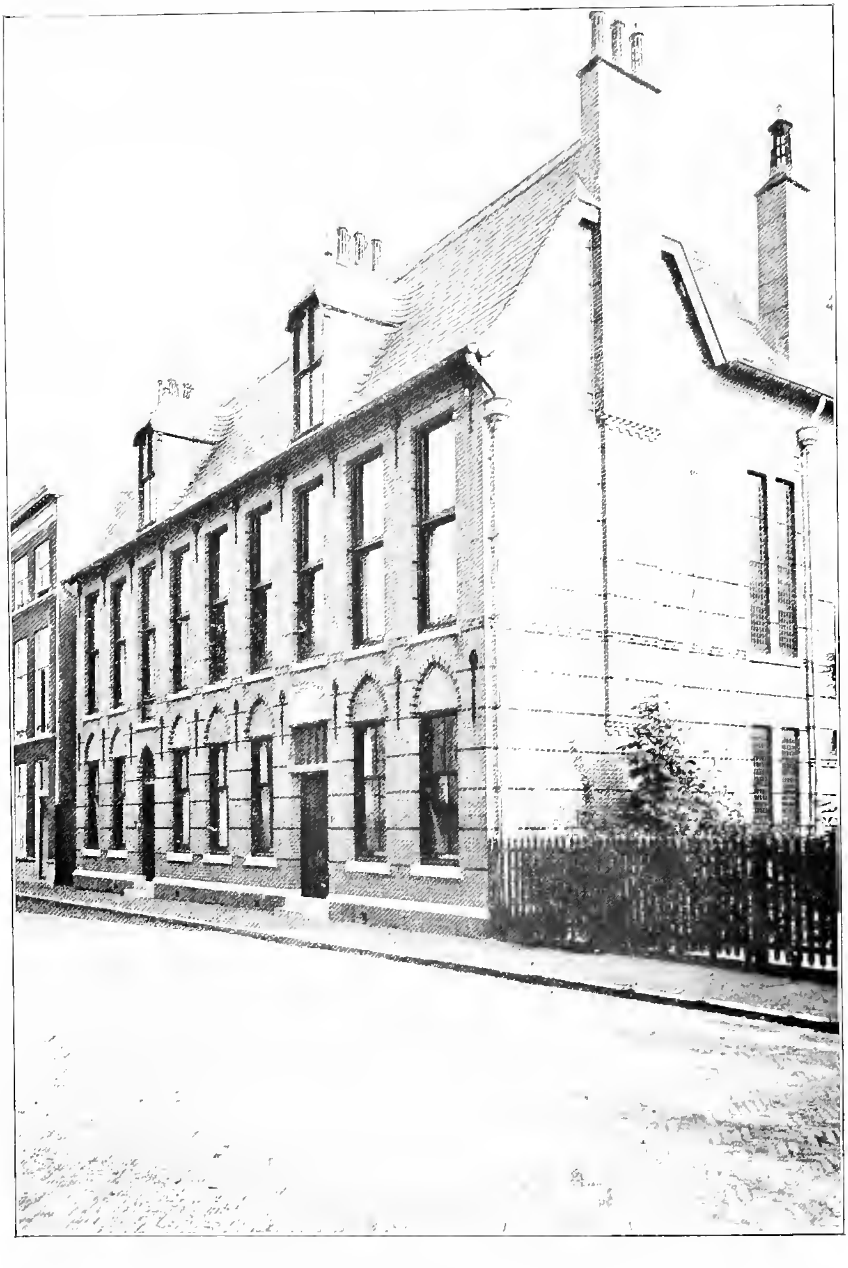
Total export 55 633 tons of which went to:

Great-Britain	13 633	tons.
Germany	12 912	„
Belgium	17 313	„
France	3 887	„

The export of cheese from the Netherlands to Great-Britain during the last ten years is shown in the following tabel:

1901	17 959
1902	16 390
1903	17 200
1904	13 474
1905	12 166
1906	12 839
1907	13 300
1908	14 567
1909	16 034
1910	13 633

This is nearly all cheese of the Gouda and Edam type. The amount of Cheese of Cheddar and Cheshire type which has been made for the last three or four years would not amount to more than about 1400 tons per annum or about 700 tons of each sort.



Government Dairy station at Leiden.

BUTTER CONTROL.

There is perhaps no article of food which has given so many difficulties to ascertain and guarantee its purity as butter. These difficulties were due to the fact that butter, being a product of nature, varied its composition, especially with regard to the quantity of certain constituents, the amount of which was and is still the only basis upon which to express an opinion as to the purity of the article. It will not be necessary to go into details as to the different methods and limits as advised by several well-known analysts, but it is a fact that still most analysts in this country as well as elsewhere rely principally upon the amount of volatile acids in butter for their guidance. In default of other means, several of them accept a standard which cannot be else than arbitrary. Such standard may not be too high nor too low. If it is too high, too many samples of genuine butter would be declared adulterated, and if it is too low, the chance of passing adulterated articles as genuine is too great. When a relatively large amount of foreign fats is present, it is, as a rule, not difficult to declare a sample of butter of unknown origin to be adulterated. However, an analyst who must rely upon the analysis of a sample brought into his laboratory, can never say with absolute certainty that the butter is pure, whatever the result of the chemical and physical analysis may be. This certainty decreases with the approaching to the adopted standard. On the other hand, even the most favourable results leave open the possibility that the article is slightly adulterated. This uncertainty has been the cause of the continuous struggle in the police-courts between experts, who consider a certain sample as adulterated, and the experts giving their services to the defending party. The existing difficulty became more acute since it was discovered that much more butter was produced with so-called abnormal chemical composition than was first thought likely by those scientists who, on the basis of a relatively small number of samples, had fixed a standard. It has become evident that a certificate of purity can only be given when the origin of the sample is known, and when its chemical composition can be compared with that of a sample of butter made under direct supervision at the same place, and at the same period at which the analysed sample originated Such is the principle of the system of butter control as established in the Netherlands, which I will now describe.

The system of butter control in the Netherlands originated in a co-operative arrangement made by the creameries to guarantee the purity of their butter. In the beginning, therefore, it had no official character, until the initial difficulties, which always beset new systems at the outset, were overcome. As soon as the Government was satisfied that the arrangements gave every possible guarantee that the object in view, viz.: — "to certify the purity of all butter made under such control," could be obtained, an official character was given to the matter. An Act of Parliament was passed and the Government mark was established. At present there are eight associations of butter producers, each of which has established a control station. The associations are under the management of committees of representative and influential men, and the committees decide whether applicants shall be admitted to the control or rejected. The working of such committees is an essential part of the system, they having power to refuse applications from undesirable persons without giving any reason for so doing. A State department could not refuse unless there was something which could be proved against the applicant. At the head of each control station is placed a director, who is a qualified chemist, and he has a staff of analysts under him according to the amount of work to be covered. The director also has under his instructions one er more inspectors, who are daily travelling about taking samples of butter and all materials used in its manufacture, in creameries or other places where butter is made, or in the shops or sale rooms of creameries and persons who have submitted to control, or of butter which has been sent out by any of the above.

Whenever advisable, the director or inspector takes samples of butter made in his presence The results of the analysis of these samples are registered, and so the officials connected with this control know almost exactly what the chemical composition is of the butter of each creamery, and at any time of the year. The control stations are under supervision of the Government, and their members are allowed to use the Government mark, provided that the regulations of the control station conform to the general rules prescribed by the Government, which subsidises the system. I will refer shortly to the most important provisions of the rules which are given hereafter. They first provide for a very thorough and general inspection of the creameries, and for compulsory registration of all the essential particulars necessary to trace the origin and destination of every parcel of butter dealt with. Members of the station must be of good repute and possess full civil rights, and shall in no way be connected, either directly or indirectly, with the manufacture of, or the trade in margarine or other edible fats or oils which might be used for the adulteration of butter. The moisture in the butter shall not exceed 16 per cent., a sufficiently heavy penalty being already imposed when butter contains more than 15½ per cent., and in the case of a serious breach of such rules, the offender shall be irrevocably struck off the roll of members and his name published.

All butter under this system must bear on the merchandise itself the Government mark. Such marks form an essential part of the system of control. They are printed by the Government printer on special thin paper, and, before being sent out to the control stations they are perforated in such a way that it is practically impossible to remove them from the butter when once applied in the proper way, *i.e.*, by pressing it upon the face of the butter by means of a special stamp. The perforations, combined with the impressions made by this stamp, practically mutilates the mark as a whole, although it appears to be one piece while on the butter. It is therefore practically impossible to use a label more than once. Apart from the letters indicating the control station, and the size of the mark, each label bears a different number, and by means of this number, and the registers kept at the Government dairy station, the control station and the creameries, it is possible at any time to trace the origin of the butter and the date upon which it was made. With this system trade secrets are not tampered with, because no outsider can trace the origin of the butter without reference to the various registers, which are only open to the officials. A supply of the marks is kept at the Government dairy station at Leiden, where they are perforated, and from whence they are distributed to the control stations as required. The Government dairy station supervises the control stations and analyses all samples of butter taken under the Netherland Butter Act. The directors of the control stations keep a record of the numbers of all marks received and sent to the creameries; while the dairies and creameries also have to keep exact records as to the use of such marks, and, as they are responsible for the proper use of same, they have every reason for keeping them in proper custody. As a result of the arrangements just described, we are in possession of analytical particulars of the butter made at each creamery and at each period of the year, and we are further in possession of instruments to enable us to trace the origin and date of production of each parcel of butter which leaves the creameries, whether it is sold in the country itself or exported. We are able to state what the chemical composition of each parcel of control butter should be. The whole arrangement dispenses with the principle of a general analytical standard, and it replaces this general standard by a special standard for each creamery, and each period of the year, while no margin is left for adulteration, and there is no uncertainty for the analyst. Any appreciable deviation shown by a sample of butter from the composition of a sample taken at the creamery from whence the first sample originated (ascertained by reference to the label) proves adulteration, even if the results of the analysis are considerably above a fixed general standard. I will now show how it is possible to ascertain all such particulars by means of the Government control mark, and will take as an example a cask of butter bearing a mark with the number E 37 222. The following particulars are taken from actual sheets in the books kept at the respective places, of which copies are reproduced here: —

1. The books of the control station at Leeuwarden show that the marks bearing the numbers 30 001—50 000 were received from the Government dairy station at Leiden on the 5th June. (*Table* I.)
2. These books show further that the marks bearing the numbers 36 701—37 400 were delivered to the creameries under control on the 15th June. (*Table* 2.)
3. These books show further that the marks bearing the numbers 36 701—37 400 were sent to the creamery at Deinum. (*Table* 3.)
4. The sale books of the creamery at Deinum show that a cask of butter, bearing the Government mark, with the number 37 222, was sold to Mr. Beck on the 5th July, 1907. (*Table* 4.)
5. The register of the Laboratory of the control station at Leeuwarden shows that the analysis of a sample of butter, officially taken at the creamery at Deinum, on the 23rd June—8th July, gave the following results: — Volatile acids, 28,9—29,5; refractometer, 44,5 and 44,7; water, 13,6 and 15,7 per cent., and therefore a sample of butter taken on the 5th July must give figures lying between these two figures. (*Table* 5.)

It is evident that a sample of butter taken from the cask bearing on the Government mark the number 37 222 must give, on analysis, the following results: —

Volatile acids, 28,8 to 29,5.
Refractometer figure, 44,6.
Water, 13,6 to 15,7 per cent.

If, for instance, the sample of butter had only 26 volatile acids, it is clear that it can not be pure, although this figure is above any general standard, and would not in itself indicate any adulteration.

In conclusion, I wish to draw special attention to the fact that the whole system originated in a voluntary co-operation of the producers, who, in the interest of their own organisation, had every reason to exercise great care in the selection and admission of members, and to watch their subsequent doings closely. Although a subsidy is given by the Government they bear the cost themselves *pro rata* to the amount of butter produced. The Government did not intervene before the producers had proved their firm intention to effectively work the system, but it followed the progress of matters all through the early stages, and since taking it over, the Government has done everything possible to assist the producers in getting the full advantage of their arrangements. The control system in the Netherlands has done more than any Butter of Margarine Act to stamp out adulteration of butter. The value of the Government mark having once become known to purchasers of controlled butter, they now refuse to accept any butter which does not bear this mark, being, as it is, practically a guarantee of purity, and thus adulterated butter has become unsaleable. The natural consequence was that the butter adulterators had to put an end to their malpractices in this direction.

Table I.

BUTTER CONTROL STATION AT LEEUWARDEN.

Marks of guarantee received from the Government Dairy Station at Leiden.

Date, 1907.	Size A.		Size B.		Size C.		Size D.		Size E.	
	Hundreds.	Numbers.	Hundreds.	Numbers.	Hundreds.	Numbers.	Hundreds.	Numbers.	Hundreds.	Numbers.
June 5. .	—	—	—	—	—	—	—	—	200	30001—50000
„ 11. .	1000	1—99999	—	—	—	—	200	50001—70000	—	—
„ 29 .	—	—	200	30001—50000	—	—	—	—	100	50001—60000
July 2.	—	—	—	—	—	—	—	—	100	60001—70000

TABLE II.

BUTTER CONTROL STATION AT LEEUWARDEN.

Marks of guarantee delivered to the Creameries under Control.

Date, 1907.	Size A.		Size B.		Size C.		Size D.		Size E.	
	Hundreds.	Numbers.	Hundreds.	Numbers.	Hundreds.	Numbers.	Hundreds.	Numbers.	Hundreds.	Numbers.
June 14	—	—	—	—	—	—	—	—	10	35201—36200
„ 15	—	—	—	—	—	—	—	—	5	36201—39700
„ 16	—	—	—	—	—	—	—	—	7	36701—37400
„ 19	—	—	—	—	—	—	—	—	15	37401—38900
„ 20	—	—	—	—	—	—	—	—	25	38901—41400
„ 21	—	—	—	—	—	—	9	50701—51600	5	41401—41900
„ 22	—	—	—	—	—	—	10	51601—52600	24	41901—44300
„ 24	—	—	—	—	—	—	3	52601—52900	4	44301—44700
„ 25	—	—	—	—	—	—	—	—	17	44701—46400
„ 26	—	—	—	—	—	—	2	52901—53100	10	46401—47600
„ 27	—	—	—	—	—	—	5	53101—53600	2	47401—47600
„ 28	—	—	—	—	—	—	1	53601—53700	8	47601—48400
„ 29	—	—	—	—	—	—	1	53701—53800	—	—
July 1	—	—	—	—	—	—	10	53801—54800	5	48401—48900
„ 2	—	—	—	—	—	—	—	—	9	48901—49800
„ 3	—	—	—	—	—	—	—	—	5	49801—50300
„ 4	—	—	—	—	5	30101—30600	10	54801—55800	9	50301—51200
„ 5	—	—	—	—	17	30601—32300	17	55801—57500	17	51201—52900
„ 6	—	—	—	—	—	—	—	—	20	52901—54900
„ 8	222	1—22200	—	—	10	32301—33500	20	57501—59500	16	54901—56500
„ 9	20	22201—24200	—	—	—	—	—	—	10	56501—57500

TABLE III.

Marks of guarantee delivered to the Creamery at DEINUM.

Date, 1907.	Size A.		Size B.		Size C.		Size D.		Size E.	
	Hundreds.	Numbers.	Hundreds.	Numbers.	Hundreds.	Numbers.	Hundreds.	Numbers.	Hundreds.	Numbers.
March 2 . .	—	—	—	—	2*a*	69701—69900	—	—	—	—
April 4 . .	—	—	2	49301—49500	—	—	—	—	—	—
May 15 . .	50	44001—49000	—	—	—	—	—	—	—	—
June 17 . .	—	—	—	—	—	—	2	49501—49700	3	37101—37400
July 26 . .	—	—	1	65301—65400	1*c*	40501—40600	2	66701—66900	2	68101—68300
Aug. 16 . .	—	—	1	65801—65900	—	—	—	—	2	78201—78400
Sept. 13 . .	—	—	—	—	—	—	—	—	2	97901—98100

TABLE. IV.

SALEBOOK FOR BUTTER OF THE CREAMERY AT DEINUM.

Date, 1907.	Marks of guarantee used			Names of the buyers of the different parcels of Butter.	Last numbers of the marks of guarantee used.		Kilogram Butter delivered in Tins.	Quantity of Butter delivered. (Kilogram.)	Signature of the Controller.
	Size.	Numbers.	Quantity of Butter delivered. (Kilogram.)		Size.	Numbers.			
July 1	D	6	150		D	49554	—	—	
„ 1	E	2	102		E	37155	—	—	
„ 1	B	1	2½		B	49423	—	—	
„ 1	A	4	2		A	—	—	—	
„ 1	A	2	1		A	—	—	—	
„ 1	A	10	7		A	44473	—	—	
„ 1	B	5	10		B	49428	—	274½	
„ 2	E	6	306		E	37161	—	—	
„ 2	E	10	510		E	37171	—	—	
„ 2	E	15	750		E	37186	—	—	
„ 2	C	1	4½		C	69847	—	1570½	
„ 3	C	1	5		C	69848	—	—	
„ 3	B	1	2		B	49429	—	—	
„ 3	A	3	1½		A	—	—	—	
„ 3	A	4	2		A	—	—	—	
„ 3	A	3	2		A	—	—	—	
„ 3	A	1	7		A	—	—	—	
„ 3	A	16	12		A	44500	—	—	
„ 3	A	21	12		A	44521	—	—	
„ 3	B	6	12		B	49435	—	—	
„ 3	D	7	175		D	49561	—	225½	
„ 4	E	6	300		E	37192	—	—	
„ 4	C	1	7		C	69849	—	—	
„ 4	B	1	2		B	49436	—	309	
„ 5	E	10	510		E	37202	—	—	
„ 5	E	10	510		E	37212	—	—	
„ 5	E	10	500	Mr. Beck	E	37222	—	1520	

Table V.

REGISTER OF THE ANALYSES OF BUTTER.

Made at the laboratory of the Control Station at Leeuwarden.

Date, 1907.	Samples of Butter taken at the Creamery.		Butter churnee at the laboratory of samples of cream taken at the Creamery.		Samples of Butter taken in course of export.		Amount of Water.
	Volatile fatty acids. R.W. figures.	Refractometer at 40° C.	Volatile fatty acids. R.W. figures.	Refractometer at 40° C.	Volatile fatty acids. R.W. figures.	Refractometer at 40° C.	
Jan. 16	27,6	44,1	27,1	44,1	—	—	15,0 %
„ 28	28,6	44,6	28,3	44,5	—	—	14,2 „
Feb. 5	28,3	44,5	28,2	44,2	—	—	15,5 „
„ 14	27,6	44,2	27,9	44,2	—	—	16,0 „
March 5	29,4	44,4	29,4	44,4	29,6	44,3	15,9 „
„ 30	30,3	44,0	30,1	44,0	—	—	13,9 „
April 13	30,4	44,0	30,3	44,0	—	—	14,7 „
„ 24	30,1	43,5	29,8	43,3	—	—	13,1 „
May 4	30,5	43,6	30,1	43,8	—	—	13,7 „
„ 18	29,4	45,0	29,7	44,8	—	—	14,5 „
June 5	29,0	44,7	29,2	44,8	—	—	15,0 „
„ 23	28,9	44,5	29,1	44,3	28,8	44,6	13,6 „
July 8	29,5	44,7	29,2	44,5	—	—	15,7 „
„ 27	28,3	45,0	27,9	45,0	—	—	14,2 „

The Netherland Government in 1904 granted the „official mark of guarantee" to the Butter Control stations at

ASSEN,
DEVENTER,
EINDHOVEN,
THE HAGUE,
GRONINGEN,
LEEUWARDEN,
MAASTRICHT and
MIDDELBURG

and assists them financially.

The principal conditions to which they must submit are the following:

1⁰. that the regulations and arrangements of the station are such as to render the supervision of the affiliated members *always and in every respect entirely satisfactory.*

2⁰. that the regulations must give to the Government the same power of supervision as is exercised by the management of the station and *also the right to control the management itself*

3⁰. that the regulations, as well as all appointments of members of the Board and of the staff and the registers used by the members are *subject to the approval* of the Government.

4⁰. any station desiring to be placed under Government Supervision must submit its regulations for approval, and must furnish a complete list of the members of the Board and of the staff, and one of the affiliated members. The station shall also submit estimates of income and expenditure.

5⁰. any station placed under Government Supervision shall at all times furnish complete information to the Department of Agriculture of all projected amendments of, or additions to its regulations, as well as of any changes in its staff and Board and of the names of all new members and of all members who may have been struck off the roll with a statement of the reasons for such action. All amendments of and additions to its regulations and all new appointments require the sanction of the Government, if the station wishes to remain under Government Supervision.

The station shall submit every year accounts of its income and expenditure.

6⁰ unless provided for in another way, the packing of butter has to bear a mark approved by the Government. This mark is intended as an *indication* for the inspectors of the Control station and for the persons charged with the Government Supervision of this control.

7⁰. *the chemical and further examination* of samples and everything connected therewith is *carried out in conformity with the rules prescribed by the Government.*

8⁰. before the stations under Government Supervision issue publications for distribution abroad, these must be submitted for approval to the Government.

In consequence of the above, the Government has prescribed a few general rules, to which the regulations of the Butter Control stations must conform, and to which those *affiliated to the Control stations* are bound to submit:

1⁰. members of the station shall not either *directly or indirectly be connected with the manufacture of or the trade in margarine* or other edible fats or oils, which might be used for the adulteration of natural butter.

They shall not transport, order to be transported, import, or export the said fats or oils, nor store them at their works, in their warehouses, shops, or factory-inclosures, or in any manufacturing-, sale- or store-rooms.

2⁰. they shall not *buy* any other butter *except such which comes from a producer who is a member of any of the stations under Government Supervision.*

3⁰. they are bound to carefully register according to instructions approved by the Government:

the quantity of butter produced by them;

all lots of butter of 5 kilograms or more, forwarded or delivered by them, as well as the total quantity forwarded or delivered by them in retail;

all quantities of butter purchased by them;

the names and addresses of all persons to whom 5 or more kilograms of butter have been forwarded or delivered and of those from whom butter has been purchased.

4⁰. they shall *at all times and without any reserve give free access to all the above mentioned places, to all duly-appointed persons acting under the authority of the Control station or of the Government.*

They are bound to furnish all *information* these persons may require; *to allow them* to inspect all books kept by them, including the lists kept in conformity with the provisions under n^0 3; permit them *to take samples free of charge, of butter as well as of the raw materials of which it was made*, and assist them in so doing, if required.

5^0. they are bound to take care that the amount of moisture in the controlled butter, whether salted or unsalted, does not exceed 16 $^0/_0$ a sufficiently heavy penalty is imposed whenever the moisture exceeds 15$^1/_2$ $^0/_0$.

6^0. they are bound to affit: 1^0. upon the package the mark approved by the Government; 2^0. on the butter itself the official mark of guarantee.

7^0. they are bound by contract to pay all penalties (which may amount to one thousand pounds) when acting in contravention of the regulations.

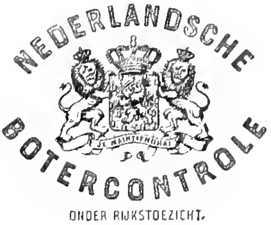
Members who make infraction to the principal rules of the regulations will be struck off the roll; their names and addresses, with a statement of the reasons, will be published in the list giving the names of the members of Control stations.

THE MARK OF GUARANTEE.

The merchandise itself bears a mark already referred to. This is a mark of guarantee and it constitutes a warrant to the purchaser that he receives butter, the manufacture of which has taken place under control. This mark is identical for all Control stations under Government Supervision. It consists of the Arms of the Netherlands over which the word "Nederlandsche (Netherland) and under which the word "Botercontrôle" (Butter Control) and in smaller characters "onder Rijkstoezicht" (under Government Supervision) are placed. By the side of this mark a letter, which indicates the Control station, is stamped on the mark and further letters and a consecutive number to identify the origin of the merchandise. This mark of guarantee is printed and numbered by the Government in blue ink on special paper.

Finally this paper is perforated at the Government Dairy Station at *Leyden* in such a way that it is not possible to remove it when once applied in the proper way i. e. by pressing it upon the face of the butter by means of a specially designed wooden stamp. The perforations, combined with the impressions made by this stamp, practically mutilates the mark as a whole, although it appears to be one piece while on the butter. Removal is therefor impossible.

The official mark of guarantee is shown hereunder:



The official guarantee-marks are printed in five sizes, stamped **A**, **B**, **C**, **D** and **E**, *each size being destined for special quantities.*

Size **A** for quantities not exceeding 1 kilogram.
„ **B** „ „ above 1 kilogram to 3 kilograms inclusive.
„ **C** „ „ over 3 kilograms and not exceeding 18 kilograms.
„ **D** „ „ „ 18 „ „ „ „ 38 „
„ **E** „ „ exceeding 38 kilograms.

The marks are to be obtained on special conditions:

The Government Dairy Station notes and delivers the checkbooks of marks with counterfoils bearing consecutive numbers to the Control stations.

The Control stations deliver them regularly to the affiliated members only against a written acknowledgment of receipt.

The adherents selling control-butter are bound to use the mark in a proper manner.

They are bound to carefully register in such manner as the Government shall approve:

1°. the letters and the consecutive numbers of the marks used;

2°. the dates on which the guarantee marks were used;

3°. the names and addresses of the purchasers.

Any member obtaining possession of the marks is responsible for their exclusive use for the butter made or sold by him.

Producers and merchants are entitled to use their own mark in addition to this general mark.

The rigorous regulations of the Control render it possible to discover in all cases any fraudulent or improper use of the guarantee mark and also the person guilty of the fraudulent practice.

Improper use of the official guarantee mark is punishable by imprisonment without the option of a fine, according to the Netherland penal code.

(Butter regulations of the 17th of June 1905, respecting the application of the mark of guarantee).

As already mentioned, the butter control is not compulsory but how much it is growing in popularity may be seen from the increase in the number of members and of the quantities of butter made under control as indicated in the following tabel:

	Number of members (creameries, farmers and merchants).	Quantity of butter made under control.
1901.	54	4 080 tons.
1902.	78	4 970 „
1903.	205	11 070 „
1904.	603	22 670 „
1905.	696	27 160 „
1906.	863	33 010 „
1907.	868	39 580 „
1908.	878	41 250 „
1909.	877	42 652 „
1910.	880	43 405 „

Official sampling of butter on the ship.

CHEESE CONTROL.

In consequence of the excellent results obtained with the Butter-Control-Stations, the Holland Agricultural Society decided in 1906 to establish, on somewhat similar lines, Control-Stations for the protection of Gouda and Edam cheese at The Hague and Hoorn.

These Cheese-Control-Stations owe their existence to the gradually increasing production of more or less skimmed cheese, made principally at the large creameries, in the well known Gouda and Edam shape. Since cream-separators have been introduced such cheeses can be made from nearly totally skimmed milk as well as from whole milk and can therefore show a percentage of fat in the dry matter varying from 2 till 55. As all cheese is equally coloured, even skim cheese, owing to the artificially very much increased amount of moisture, may have, when very young, the appearance of fat cheese. The absence of the normal quantity of butterfat has naturally an unfavourable effect on the taste and flavour of the cheese and as such excessive amount of moisture decreases very quickly when the cheese becomes older, the very poor qualities will soon become very hard and of little market value.

When only part of the cream is taken away, a so called half-meat or half-fat cheese is obtained which can be sold cheaper than whole milk cheese and which must be considered as an excellent food for people who can not afford to pay for the full cream article.

It is however well known that such half meat cheese and even poorer qualities have repeatedly been sold as full cream, to the detriment of the genuine article. For this reason cheesemakers and merchants as well as consumers have insisted on the adoption of a mark which would give a guarantee of quality to the consumer and protect the cheesemaker and the honest merchant against unfair competition. This has resulted in the establishment of the above named Cheese-Control-Stations.

Apart from a warrantee that the cheese is made from whole milk a guarantee is given that the cheese does not contain less than 45°/₀ of butterfat in the dry matter.

The result of the analysis of over 1300 samples of full cream cheese, during three successive years, has shown that the average percentage of fat in the dry matter of the cheese is over 48, that about half of the total number contained from 47—50 $^0/_0$ and that one fourth of the analysed samples gave more than 50 $^0/_0$ of fat in the dry matter and has introduced in Parlicement a bill, which has already passed the second chamber, to establish a Government mark far all Gouda and Edam cheese made under such control.

In consequence thereof the Government has now promised official support to the Cheese-Control-Station "Zuid-Holland" at The Hague and the Cheese-Control-Station "Noord-Holland" at Hoorn for full cream cheese containing not less than 45 $^0/_0$ of fat in the dry matter and has introduced in Parliament a bill which has already passed the Second Chamber, to establish a Government mark for all Gouda and Edam cheese made under such control.

The control mark comprises two different marks:

1^0 a standard control mark.

2^0 a changeable mark, to indicate any particular cheese factory.

Whilst the dimensions of the changeable mark are the same for the various sorts of Gouda and Edam cheese, made from full cream milk, two sizes have been adopled for the standard control mark:

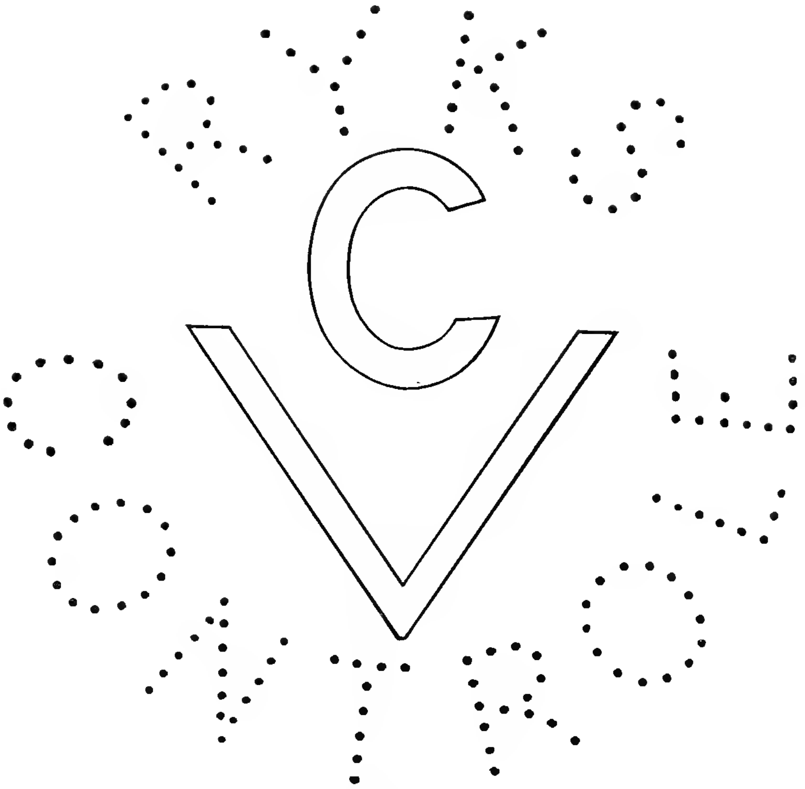
Size A for the large Gouda cheese.
„ B for the small Gouda cheese (of one kilogram and half a kilogram) as well as for the Edam cheese.

I. The standard control mark is composed of two parts:

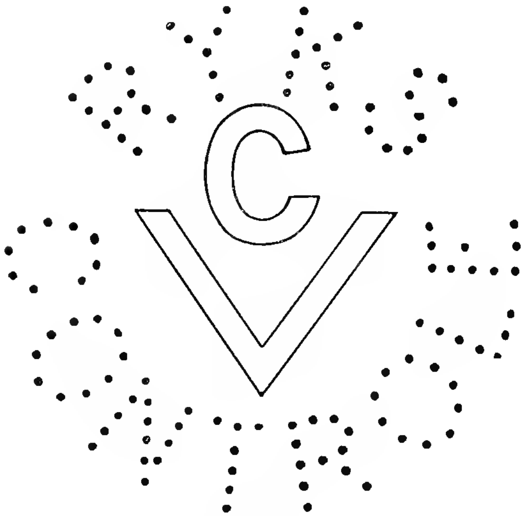
a. a mark in relief enclosing the letters **V** and **C**, placed one above the other: $\overset{\textbf{C}}{\textbf{V}}$, it is put on the crust of the cheese by applying, through pressure and during preparation a stamp bearing the above letters;

b. a dotter mark consisting of the word „Rijkscontrôle", which is applied by means of a stamp furnished with pointed needles, to the crust of the cheese immediately after the same has been pressed and rounded, and shortly before it is put in pickle.

This dotter mark is placed in a circle on the cheese round the mark in relief.



Size A.



Size B.

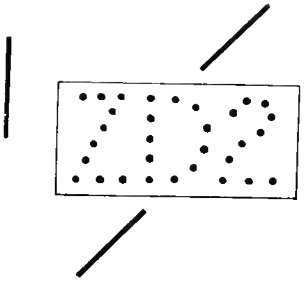
II. The changeable identification mark, which is deeply imprinted on the crust of the cheese by means of a stamp fitted with needles, comprises:

a. for each separate dairy unchangeable signs, consisting of three pointer lines which vary in position and direction with each dairy, such position and direction corresponding with three of the pointers of the key given below, with regard to which each of the pointerlines occupies a fixed position.

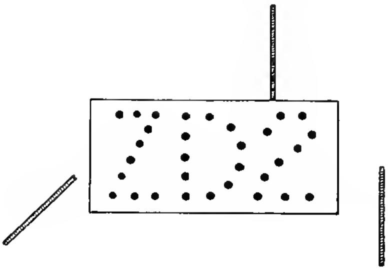
The pointers of this key are disposed in eight fixed ways turning round the centres as shown, sothat as regards each of the 8 figures, they may be placed in four different positions.

By blackening or striping each time three pointers of the key corresponding with the pointer lines found on the cheese, the identification mark chosen for each dairy may be easily identified, f. i.:

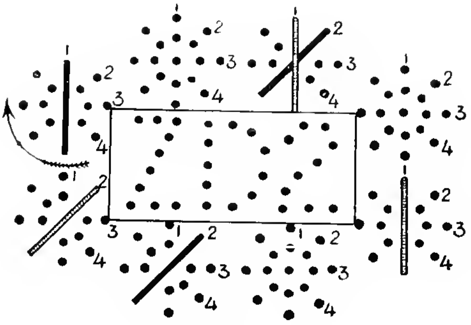
Identification mark of Dairy or cheese factory n°. I.



Identification mark of Dairy or cheese factory n°. II.



In the key below, the pointers (distinctive marks) are indicated.:
for dairy or cheese factory n° I by black lines
for dairy or cheese factory n°. II by striped lines.



Key.

By using the three figures always in the order shown in above design by an arrow, that is to say, by beginning at the top figure on the left, and by indicating in each figure by 1, 2, 3 and 4. The 4 pointers which represent therein the four possible positions, it will be practicable to indicate by a number, the position of the pointer lines of any cheese; consequently any dairy or cheese factory may be registered under a certain number, f. i.:

In the case of dairy cheese factory n⁰. I the position of the pointer lines is expressed by:

10200020

that is to say: the three pointers start from n⁰. 1 of the first figure and go on to n⁰. 2 of the third figure, then to n⁰. 2 of the seventh figure; the figures of the key through which the pointers of the identification mark of a dairy do not pass being indicated by 0, to avoid confusion. The number indicating any particular dairy or cheese factory must therefore invariably be composed of eight figures.

In the case of dairy n⁰. II, the position of the pointers lines, is expressed by:

00101002

Keys will be placed at the disposal of all authorities abroad: these keys, after indicating thereon the pointers found on the cheese, also the letter showing the control station and the letter and number representing the month and the week of manufacturing, may be forwarded by them to the Government milk station at Leiden with a request for further particulars about the cheese concerned.

Or they may remove a thin slice from the crust of the cheese, on which the identification mark appears and forward same to Leiden; the complete identification mark will still remain visible on the crust of the cheese.

b. For each separate dairy or cheese factory, three changeable marks, consisting of two letters and one figure, made by means of needles placed on movable pads, fitting into the stamp, as follows:

1. a letter, indicating the control station, to which the dairy or cheese factory is affiliated;
2. a letter, indicating the month in which the cheese was made;
3. a figure, indicating the week in which the cheese was made.

The marks referred to under 2 and 3, change every month and every week.

For the marks referred to under *b* **1**, the letters **Z** (control station of Zuidholland cheese) and **N** (control station of Noordholland cheese) are taken.

For the marks, referred to under *b* 2, the letters **B, C, D, E, K, L,** and for the marks referred to under *b* 3, the figures 2, 3, 5, 7. are taken.

All the pads are interchangeable, in the stamp; they all exhibit on their upper part a very neat reproduction of the letter or the figure formed by the needles on the outside of the movable pads.

By using various combinations of the above mentioned letters and figures, it is possible to indicate, besides the name of the control station to which the dairy or cheese factory is affiliated, the year, the month and the week in which the cheese was made; f. i.: for the first six months of the year, the letter of the month is placed before the figure of the week; for the last six months, on the other hand, the figure of the week precedes the letter of the month.

For a whole year, the letter, indicating the control station remains stationary; but this position changes each year so that by placing, in the case of Zuidholland, the **Z** respectively in front, in the middle or at the end, the years 1910, 1911 and 1912 may be indicated.

The year 1913 will be indicated by placing the **Z** again in front.

As far as the degree of maturity of the cheese is concerned, it will in no case be necessary to take into account more than three consecutive years.

The following are examples of possible combinations.

Z B 2 = cheese made in the 1st week of the 1st month (January 1910) at a dairy or factory affiliated to the control station „Zuidholland";

Z 2 B = the 1st week of the 7th month of 1910;
Z C 3 = „ 2nd „ „ „ 2nd „ „ 1910;
Z 3 C = „ 2nd „ „ „ 8th „ „ 1910;
C Z 3 = „ 2nd „ „ „ 2nd „ „ 1911;
3 Z C = „ 2nd „ „ „ 8th „ „ 1911;
C 3 Z = „ 2nd „ „ „ 2nd „ „ 1912;
3 C Z = „ 2nd „ „ „ 8th „ „ 1912.

SUPPLEMENTARY IDENTIFICATION MARK.

By the side of the standard control mark, three groups of two dots may be applied outside the circular inscription: "Rijkscontrôle" and between certain letters.

This special mark, forming a whole with the circular inscription "Rijkscontrôle", different for each dairy or factory, will serve to identify such factory in any case, even if, intentionally or otherwise, it should have neglected to put on its cheese the changeable identification mark.

Government agricultural Experimental Station — Experimental Dairy Farm at Hoorn.

AGRICULTURAL EXPERIMENTAL STATIONS.

The object of these institutions is:

1°. To make investigations and to conduct experiments in the interest of agriculture.

2°. To analyse on request of those interested, products of agriculture and dairying and fertilising and feeding stuffs, at a low, officially fixed fee.

3°. To combat adulteration of feeding stuffs, fertilisers and seeds.

The agricultural Experimental stations are Government institutions and the methods to be followed in the laboratory are prescribed or approved by the Minister of Agriculture. The directors must endeavour to work as far as possible on similar lines.

At the head of each station is a director, who has at his disposal a competent staff of chemists, analysts, bookkeepers etc.

The directors have drafted modelcontracts for the usual transactions, by which the duties and rights of buyers and sellers of feedingstuffs, fertilisers, insectisides etc. are regulated. Everything is done to induce farmers to use these models, whenever they buy any of these articles. It is due to these stations that the farmers now understand the necessity of having their purchases analysed. Several investigations in connection with the composition of the soil, the influence of seawater on the land, the effect of manuring, and physiological questions affecting plantlife have been made.

The following tabel will give an idea about the number of samples analysed annually by each of the stations:

	1903.	1904.	1905.	1906.	1907.	1908.	1909.
Goes	2810	3283	3919	4702	4604	4705	4999
Groningen	3387	3572	4758	5702	5752	5739	6041
Hoorn.	5602	5963	4720	5176	4467	4102	4314
Maastricht	1233	1501	1639	1888	2284	2488	3103
Wageningen	2646	2786	2957	3470	3530	3981	4563
Wageningen (seed testing)	1580	1578	1558	1775	1902	2324	2234

On the average each sample is analysed twice according to two different methods.

Lately the service of the Agricultural Experimental stations has been reorganised so as to establish at each station two different departments. One specially devoted to scientific research and the other for the analysis of samples.

Government Agricultural Experimental Station and Institute for Seedtesting at Wageningen.

The total number of persons forming the staff of the six stations amounts at present to about 120 who are all well paid and are entitled to a pension after retirement from actual service.

The total annual expenditure for these Agricultural Experimental stations (exclusive of buildings) amounts to about £ 13 125 and the total income from fees for testing samples only to £ 3446. The fees are very low and are only ten pence for each qualitative analysis and double this amount for each quantitative analysis.

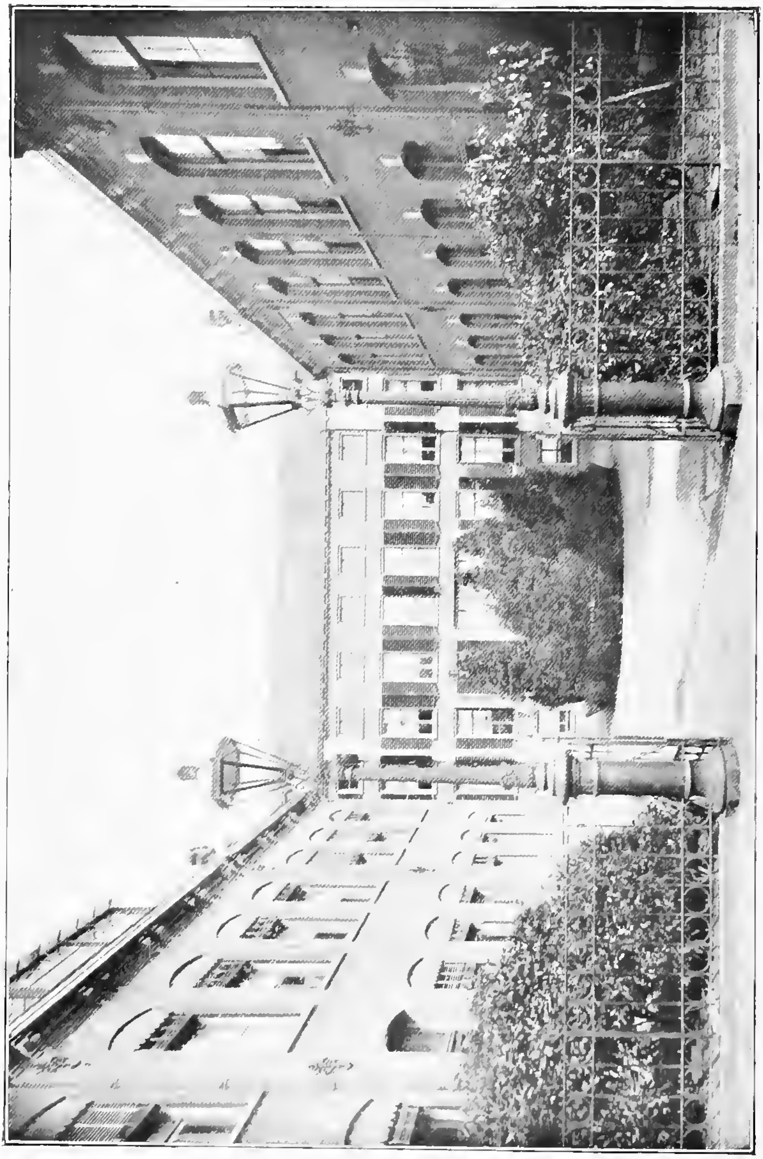
In order to ascertain to what extent articles are adulterated, which are not sold under the usual form of guarantee the Government has appointed two Inspectors to visit the farms and to take samples of fertilisers and feeding stuffs. If such samples, on analysis, are found to be unsatisfactory, the supplier of the goods is warned. If such warning would not have the desired effect his name is published officially by the Agricultural Experimental Station.

The Agricultural Experimental Station at Hoorn, is more particularly entrusted with all researches regarding dairy matters and has a special department for Bacteriological purposes. In connection herewith is established the

EXPERIMENTAL DAIRY FARM.

This farm is built in usual style of the North Holland Dairy farms, and is under the management of a society formed for this purpose, which receives the necessary funds to cover the costs of experiments from the Government. This farm is for all purposes at the disposal of the Agricultural Experimental Station.

30 Milch cows are kept, the milk of which is worked into Edam cheese. Several experiments have been made here including those concerning the process of cheese ripening the use of pure cultures, the defects in cheese, the methods of feeding etc.



State High-Agricultural-, Horticultural- and Forestryschool at Wageningen.

THE STATE-HIGH-AGRICULTURAL-, HORTICULTURAL- AND FORESTRYSCHOOL AT WAGENINGEN.

The first object of this Institute is to form scientific agricultural-, horticultural- and forestry experts and agricultural chemists. It opens the opportunity for the sons of great landowners, well-to-do farmers, and large nurserymen to be scientifically educated and to acquire such knowledge of agriculture, horticulture and forestry as will be essential for their future position in society. The school serves further for the education of such men as are required by the State, companies or individuals, to look after the interests of and to study agriculture in its widest sense, such as agricultural instructors, horticultural instructors, teachers for agricultural- and horticultural schools, dairy instructors, assistents, chemists and agriculturists for the Agricultural Experimental stations, officials for forestry at home and the Dutch Indies, personnel for the Netherland Heath Association; employees for Culture Companies at home and the colonies, etc.

To do all this the education is brought to a high level and no one can be admitted to any examination, who has not the qualifications required for admission to the University.

The full course takes three years, the first of which is practically the same for all purposes. After the first year the students follow different classes according to the object they have in view.

For those who intend to become instructors for agriculture, horticulture or dairying an additional course in the fourth year is given.

Special lessons are also given on economical geography. The object of this is to teach everything in connection with the distribution of produce and the knowledge of agricultural affairs in foreign countries. It is considered essential for a qualified agriculturist to keep in touch with the efforts made in foreign countries to promote the interests of the agricultural industry in its widest sense.

Apart from education, the professors devote part of their time to research work.

To facilitate the admission of foreign students, the rules of the schools provide for an exemption from the usual qualifications, by Royal decree. In such cases a certificate will be required from a foreign institute which can be considered as sufficient guarantee that the knowledge of the intended student is sufficient to follow the school with success.

The principal of this institute is Mr. L. Broekema and the staff consists of 25 professors, 1 librarian, 1 secretary and 2 assistants. In addition to this there are 10 other men employed for different purposes.

Connected with the school is an experimental field of about $2^1/_2$ acre and at a little distance there is an additional plot of land of 5 acres for similar purposes. The school has also a farm with an acreage of about 16 acres, for educational purposes. In addition 5 acres pasture land for the cattle is rented.

On this farm called "Duivendaal", good specimens of different breeds of cattle are kept among which several foreign breeds are represented.

Connected with the High Agriculturalschool are three institutions, viz: the laboratory for the technology of the sugar, the Instituts for agricultural machinery and buildings, and the Phytopathological institute.

The first is destined to give special instruction for experts in the manufacturing of sugar in Europe as well as in the colonies.

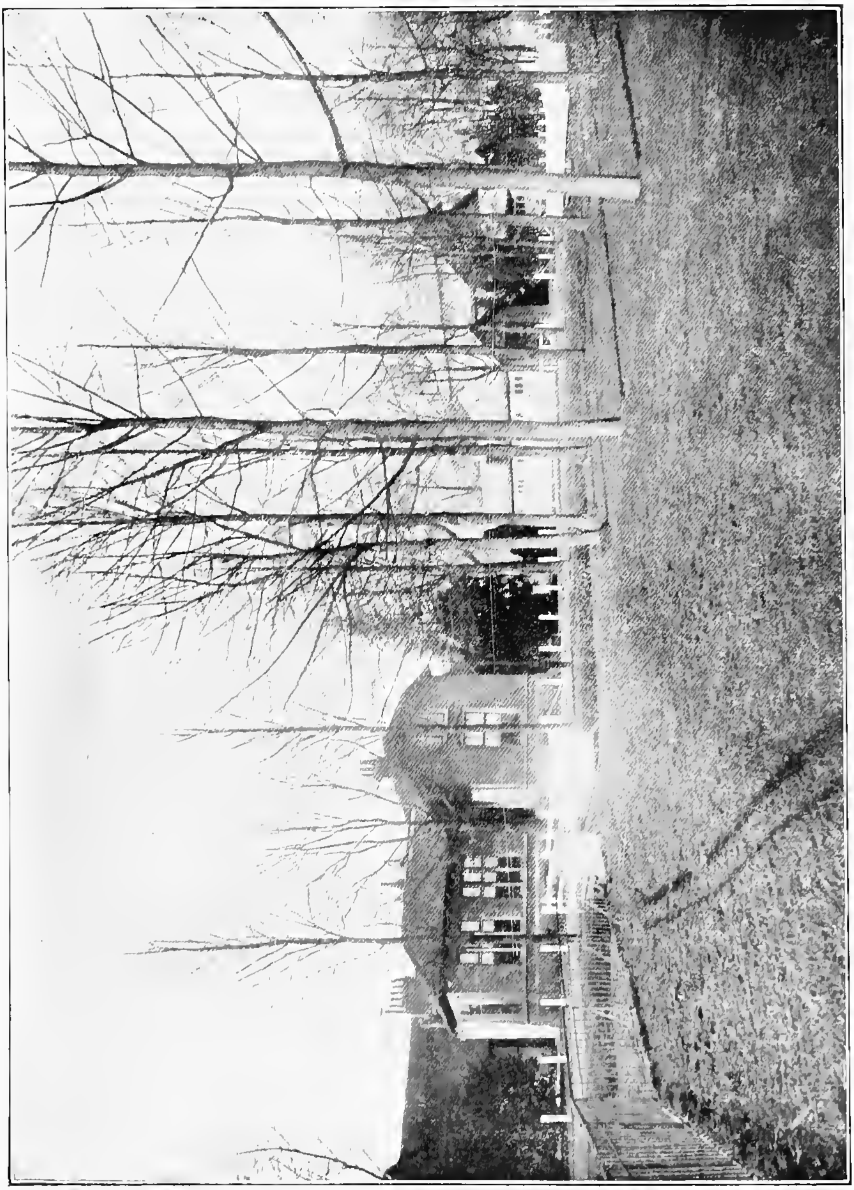
The second make experiments and investigations in connection with agricultural machinery and impliments and shall give all informations required by farmers who intend to buy new machines or to erect new buildings.

The third gives informations on diseases of plants to agriculturists and horticulturists and makes investigations on the best methods for preventing and combatting such diseases.

The principals of these institutes are also professors to the Agriculturalschool.

A Bill, introduced by the Government is now under consideration in Parliament, to split this school in three independant institutions. One to remain at Wageningen and to be come a Agricultural University one to be established at Zutfen for the education of students going to India and one to be established at Groningen for the education of future farmers and agricultural economists.

Institute for phytopathology at Wageningen.



Experimental farm “Duivendaal” near Wageningen.

State Dairyschool at Bolsward.

DAIRY "DE SIERKAN".

This dairy, being a private entreprise, was established in 1879 and handles now daily about 9000 gallons of milk. The "Sierkan" has 7 receiving stations for the milk brought by the farmers. The central establishment, which will be inspected by members of the party, receives most of the milk by rail or tram. In consequence of the gradual extension, the premises are composed of several separate departments in which butter, cheese, pasteurised milk, sterilised milk cream, sour milk etc. are made. The size of the central establishment is about 3000 sq. yard. The company owns two farms, twenty shops and employs 350 men.

DAIRY "DE LANDBOUW".

In the district round "The Hague" a good many dairy farms are found, the number of which has greatly increased with the growing demand for milk and the establishment of large dairy companies. With the increase in the supply the original prices paid to the farmers dropped to a certain extent, and the some of them considering that it would pay them better to do without the Dairy companies, organised to establish their own distribution centres. The Dairy association "de Landbouw" established in 1900, was the outcome of such organisation. The "Landbouw" is a Limited Company with a working capital of £ 8400. All farmers supplying the milk are shareholders in this company but no shareholder can ever win more than 4 °/₀ on his share capital. Any profit made over 4 °/₀ is divided between the farmers-shareholders according the amount of milk supplied. In their own interest the farmers must cooperate to supply only the best article. The milk is strained at the farms with an Ulax strainer and cooled with a Schmidt's refrigerator. As all farms are situated at a short distance from the Hague, there is no long journey which might be detrimental to the quality of the milk.

The "Landbouw" has four establishments to receive milk, in two of which butter is made. The main object is to sell the milk fresh and pasteurised.

There are 35 farmers-shareholders with about 1500 cows supplying from 3500—4400 gallons of milk daily. For the distribution of the milk 80 handcarts and three horsedrawn carts are used and the milk is retailed in seven shops.

DE KON. NED. MAATSCHAPPIJ VOOR KAAS- EN ROOMBOTERFABRIEKEN

(ROYAL NETHERLAND DAIRY COMPANY).

This limited company was established in 1882, under the name of "Netherlands Dairy Company", and started its business with two factories, one in Sneek and one in Bolsward.

These two factories introduced factory cheese making into Friesland, which, before 1882, was completely unknown in that district.

The new industry has taken a tremendous flight. The company could add three factories to their list (those in Oosterlittens, Oudega and Wommels), and the example was extensively followed: cheese and butter factories (private and on the co-operative system) arose all over Friesland.

In recognition of the services this Company rendered in establishing a new industry, it pleased H.M. The Queen, in 1900, to confer on the company, by royal warrant, the honorary title of "Royal."

The quantities of milk worked daily by the Company have gradually increased—in the beginning they were very small indeed—inducing the farmers to sell their milk to the factories, instead of turning it into butter and cheese, as their fathers and grandfathers had done before them, proved to be a tedious, difficult, and even expensive undertaking, but gradually they were won over to give the new system of disposing of the milk a fair trial.

In 1889 three of the factories (Sneek, Bolsward and Oudega), though originally containing sufficient space, had to be extended, in order to create room for the sea of milk that poured into them.

By that time the daily quantity of milk worked in summer by the five factories did not fall far short of 50,000 gallons.

In winter these quantities used to go down to one-half and less, till the farmers accustomed to the new conditions of business began to change the "calving time" of the cows. Now part of the calves are born in spring and part in autumn, instead of all in spring as the old custom was, and as a consequence the flow of milk is more regular, the maximum in summer not so high, the minimum in winter not so low as it used to be.

The products of the Company, soon succeeded in attracting the attention of the trade in England, Scotland, Germany, Belgium and France, and before long its reputation was firmly established. The Trade Mark "Pan" is now one of the best known brands in England and more particular in London, where the average daily consumption of Pan-Gouda's amounts to about a thousand cheeses.

Belgium is another important customer for Pan cheese, and every week wagon loads are despatched from the railway stations near the factories straight to the chief towns in Belgium: Brussels, Antwerp, etc. The rest of the Company's cheese is divided between Scotland and Germany very little being left over for other countries, the demand continually exceeding the supply.

The butter exported to England under the "Pan," to Scotland under the "Crown" brand is packed in boxes of various sizes, containing rolls varying in weight one-half to two pounds. The Continent demands chiefly the Danish package, the cwt. and half cwt. cask.

For some years the Company has been packing butter in tins, but this business was pushed less and less on account of the increasing demand for the "Pan" butters nearer at home. At present the tinning business is quite unimportant, only old regular customers, who pass their orders before the grass season sets in, are still served.

This is not the place to enter on extensive technical details, suffice it to say that in course of time the entire system of butter making has been changed and considerably improved, and the differences in cheese making twenty years ago and now are so great that we can say that an entirely new system of cheese making has been evolved.

The manager of the Company is Mr. J. G. HIBMA.

FARM OF MESSRS K. N. KUPERUS & SONS, MARSSUM NEAR LEEUWARDEN.

The area of this farm is 110 acres, and the land, heavy claysoil, is all under grass.

This is divided by ditches into sections of from two to about ten acres. About one third of the whole area is used for pasture, the other two thirds being devoted to the production of hay. When the grass has been mown in the early part of the summer the cattle are allowed to graze on this portion of the farm too, though if the aftermath of grass is very good portion of it may be mown a second time for hay or ensilage.

On the farm are kept in summer about 34 milch cows, 10 yearling heifers, 2 service bulls, and 24 calves, all herdbook cattle, besides about 20 Friesian pedigreed sheep and lambs and 3 horses.

The cattle are turned out to grass in the early part of May and are never stabled until about the beginning of November.

If the weather should be cold the cows are blanketed, and the calves are put in the barn at night for the first fortnight after they are turned out in May.

Cows and yearling heifers are served principally in May or June in order that they may calve in February or March of the next year, when these heifers will be about two years old.

In summer the cows and heifers get nothing but grass. The cows are milked twice a day. Until about the middle of June the calves are fed twice a day with a ration which consists of whey and butter milk and 1 litre of full milk mixed with some linseed cake meal. After the middle of June the older heifer calves get no more full milk. The younger calves and the bull calves continue to get the above food, to which is added some Friesian sheeps' milk.

From about 1st November to 1st May the cattle are kept continuously in the stables. Cows and heifers get during this period plenty of hay and 1 kilo of linseed cake per day before calving, which is, after calving, increased to 2 kilos of linseed cake, or 1 kilo of this food and 1 kilo of earthnuts cake per day; while the heifer calves get besides hay $^1/_2$ kilo of linseed cake and $^1/_2$ kilo of linseed cake meal mixed with whey and water.

The bull calves get a little more of these concentrated foods, especially as they grow older and the winter advances.

Calves are taken from their dams immediately after birth, and put on dry straw in a barn in which the temperature is suitable, and here they are rubbed dry with straw. When about an hour old they are given a little of the dam's milk and thereafter for the first three days they get of the dam's milk three times a day.

After the first three days they get full milk twice a day till they are two or three weeks old. For the next four weeks they are fed on full milk and butter milk and after that get whey, some butter milk, and some full milk until they are turned on to pasture.

It is rather difficult to define exactly the ration to be given to calves as one animal can digest much more than another. It is advisable for this reason to let the same man always feed the calves, as by constant observation he will be able to guard against over feeding and under feeding.

Since 1897 the milk of the cows has been weighed and tested for butterfat by a milk controller morning and evening once every fortnight.

The milk is sent to the cooperative creamery; and paid for according to the percentage of butterfat. From the quantity of milk sent to the factory the farmer gets back gratis 70 % of whey and 12 % of butter milk, in addition to which he buys some extra butter milk from the creamery for his calves.

The Friesian Herdbook Association has appointed a head controller who again controls the work of the above mentioned milk controllers so that the milk records in the Friesian Herdbook are official.

The records of the afore named herd of cows, about 30 in number have for full lactation periods avegared as follows:

Anno.	Lbs. milk.	Fat percent.	Lbs. butter.	Days milked.
1897	9 235	3,15 %	308	287
1898	11 457	3,28 „	404	314
1899	11 275	3,39 „	413	306
1900	10 441	3,46 „	391	284
1901	9 750	3,47 „	367	297
1902	10 577	3,44 „	393	299
1903	11 312	3,50 „	429	317
1904	10 443	3,52 „	398	296
1905	11 004	3,44 „	409	332
1906	10 890	3,44 „	407	287
1907	9 625	3,43 „	356	298
1908	9 636	3,34 „	347	274

In 1897 the herd averaged 3,15 °/₀ of fat. At that time there were 11 cows in the herd yielding less than 3 °/₀. But by selling these and breeding from the better ones the yield was brought up to an average of 3,52 °/₀. From this point the percentage has fallen somewhat owing to foreign buyers wanting some of the best animals, and the great difficulty of replacing, by purchase from other farmers, those sold with other animals with high butter fat yield. As to the average milk production this is materially affected by such factors as having a number young cows in the herd, the length of lactation period etc.

At the annual show of Herdbook cattle at Leeuwarden on the 30th August 1900 three of the Marssum cows were awarded first prize for the highest butter record, and three cows were awarded first prize for the highest milk record.

All these cows had calves again within about one year from the time of the previous calving in 1899 when the records began.

The records of these cows were as follows:

Name of Cow.	Herd-book N⁰.	Lbs Milk.	Fat per cent.	Lbs. butter.	Days milked
Grietje . .	N⁰. 3650H	14 407	3,47 °/₀	541	300
Jantje . .	„ 2680H	16 557	3,21 „	574	300
Roeltje	„ 4395H	14 902	3,80 „	616	317
Pel XX	„ 8329	14 579	3,50 „	554	300
Tietje IV	„ 8886	14 198	3,41 „	523	318
Maryke	„ 3652H	18 106	3,00 „	583	329

These cows had in the summer of 1899 excellent pasturage, but no other feed at all. They were stabled about the middle of October. Their food consisted of ample hay of early mown grass, early mown grass ensilage, and 2 kilos of linseed cakes and 1 kilo of earthnuts cake each per day until the lactation period had ended by their being dried off about 8 weeks before calving again.

During the whole period the cows were milked, as usual, only twice in every twentyfour hours, viz, between 4 and 6 in the morning and at the same time in the evening.

Butter cellar at Creamery at Marssum.

SOME PARTICULARS ABOUT THE COOP. CREAMERIES AT MARSSUM AND WIRDUM.

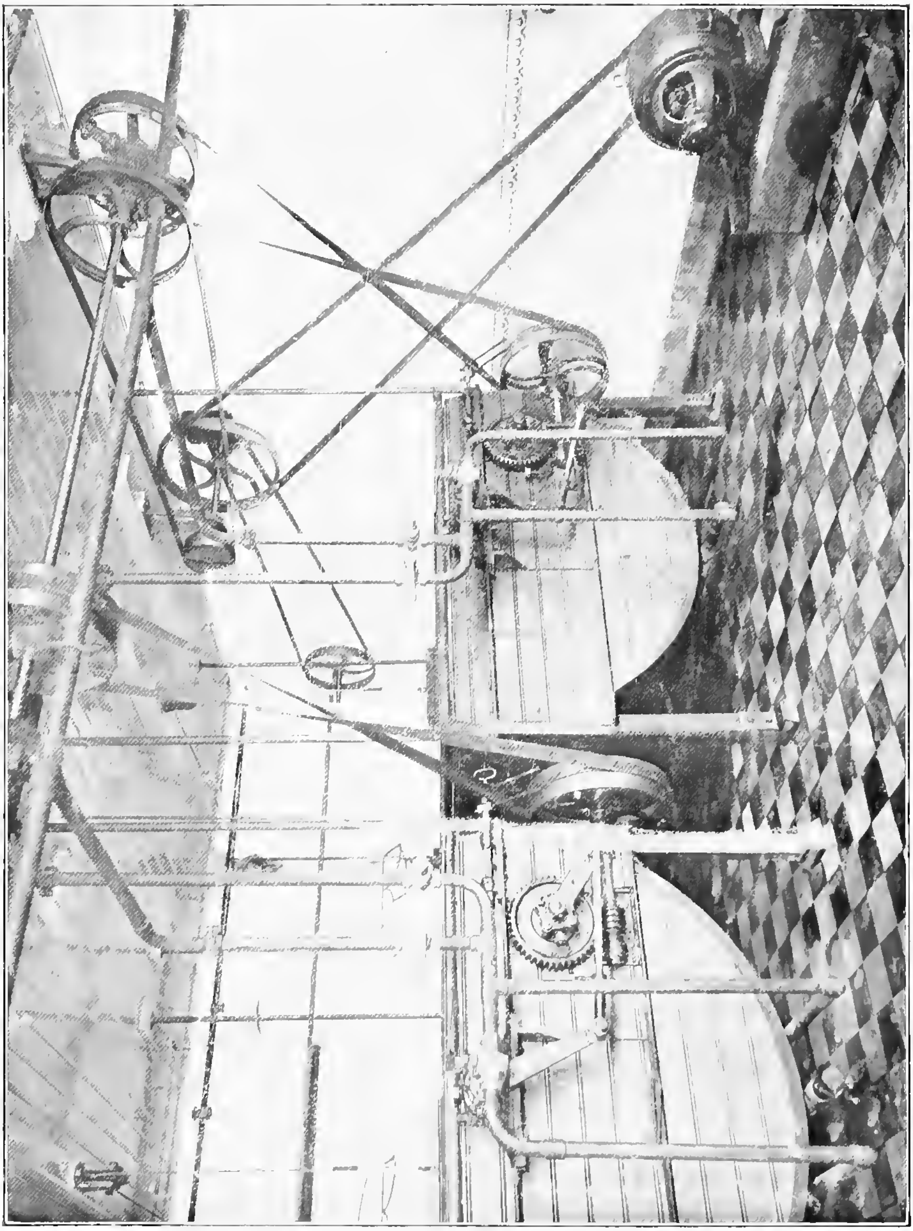
	Wirdum.	Marssum.
Number of members	76	186
Number of milch cows	1648	1705
Gallons of milk (approxim) . . .	1.470.000	1.468.000
Money paid by Creamery to members	£ 26.260	£ 26.456
Butter made	185,5 tons	215,5 tons
Cheese made	386,5 tons	316,5 tons
Revenue from butter	£ 19.541	£ 22.880
„ „ cheese	£ 8.538	£ 5.655
Expenses	£ 2.883	£ 3.300

The milk is delivered to the creamery twice daily, and is immediately on receipt weighed and sampled. One part of the milk is separated with a separator working 2—3000 Liter per hour.

The other part is cooled till about 12 centigrades and collected in large basins of about 2000 liter, where it is left for 12 hours. The cream which has risen to the surface is taken off and the partly skimmed milk, so obtained, is used for cheesemaking.

The cream is pasteurised at 80—85 centigrades and then after it has been cooled till about 15 centigrades, and after adding some pure culture, brought in the cream ripening apparatus. The ripening of the cream takes about 20 hours, during which period the temperature must be watched. At the end of this period the cream is churned.

The butter milk and the whey are returned to the farmers.



Apparatus for cream ripening at the Creamery at Wirdum.

EDAM CHEESE MAKING.

The name *Edam cheese* is derived from the name of a small town in the province of Northholland. It has the shape of a ball and is made in three sizes. The ordinary small ones weigh 2 kilos, the "commissie" (commission) cheese, four kilos und the "middelbaar" (middlesized) six kilos.

Originally Edam cheese was made exclusively at the farms twice a day. Now however it is only made once a day, in the morning, and in most cases the milk is sent to the factory to be worked up into cheese. These factories are as a rule established by co-operative organisations, who take the milk of members only. As a rule they are not large, handling on an average about 175,000 gallons of milk with an output of nearly 70 tons of Edam cheese per annum. The farmers bring the milk in the morning and the whey is returned to them after it has been kept for one or two days, to skim off the cream. From this cream "whey butter" is made for home consumption. As a rule the farmer keeps the evening milk overnight and after the small layer of cream has been taken off it is sent with the full morning milk to the factory.

The cheese made from this mixed milk is known as "dag kaas" (day cheese) and contains 40 $^0/_0$ of fat in the dry matter. Sometimes the evening milk is taken directly to the factory where it is cooled overnight in Swartz cans, set in running water which is about 52° Fahr.

Although some variations of minor importance occur, the usual method of making Edam cheese is as follows:

The mixed milk is brought to the proper curdling temperature 80—84 deg. Fahr., coloured and renneted. Before renneting, as a rule, so called "lange wei" (slimy whey) is added at the rate of three liters (nearly 3 quarts) to forty-two gallons of milk, and for colouring anatto is used.

In the succeeding half hour, the cream is curdled and goes through the ordinary operation of cutting and mixing. A clear whey indicates a satisfactory process. After stirring for about 30 minutes, part of the whey is taken off, heated (not above 110 deg F.) and added again to warm up the curd so that the temparature is gradually raised to 86 deg. Fahr.

The whey is then drawn off and as soon as the curd properly settles it is filled into the cheese moulds and covered over. After about one hour the cheese is turned over in the mould and left for another hour. After having been covered with a fine calico cloth it is pressed for a period of from four to six hours and then taken out of the moulds and pickled by immersing in a strong brine. The cheese, are then rubbed over with a coarse salt about twice a day during three to seven days according to the size and then removed to the shelves. Here they are turned every morning, and after about eight days they are soaked in clean water for about three quarters of an hour, well washed, and wiped dry. Before sending to the market, they are washed again and finely rubbed over with a little oil.

On average, 50 lbs. of milk are used for one cheese of 2 kilos (4.4 lbs.)

GOUDA CHEESE MAKING.

This sort of cheese was originally made in the district round Gouda only, but this industry has since long extended to the whole of the provinces Southholland and Utrecht.

Unlike the Edam cheese industry, the Gouda cheese is nearly all made at the farms and only to a small extent at factories.

The Gouda cheese is a full cream cheese, no cream is taken off from the milk from which it is made.

As a rule the farmer makes Gouda cheese twice daily, the milk being set in large round wooden tubs, holding about 45 gallons.

The fresh milk is brought to a temperature of 30° to 32° C. (84° to 89° Fahr.) either by adding hot water, or by cooling a part of the milk as may be required. Then Vissers rennet in the proportion of 10 drachms to 20 gallons of milk, cheese colouring in the proportion of 16 grains to 20 gallons of milk, and cheese nitre in the proportion of 5 drachms to 20 gallons are added. Half an hour after the addition of rennet the curd should be firm enough for cutting.

The cutting is done with an American curd cutter, and usually occupies about half an hour. When the pieces of curd are about the size of peas and begin to shrink a little, they are allowed to settle in the whey for five minutes, and the cover is put over the tub.

After this a proportion of whey is drawn off, and boiling water is added to the contents of the tub, while the curd is being vigorously stirred, until the temperature is raised to 35.5° to 36.5° C. (96° to 98° Fahr.).

The curd is now left to settle for ten minutes, after which the whey is drawn off, and the curd is kneaded and pressed with the hands and filled into moulds.

The moulds are prepared for the curd by being heated in warm whey and lined with a cloth.

The curd is put under gentle pressure for fifteen minutes; then it is turned, and the cloth is well wrung through with warm water. It is replaced under press, and pressure is gradually put on up to 100 to 150 lbs. for

$17^1/_2$ lbs. of cheese, or 8 lbs. on 1 lb. of cheese. The cheese is left for twelve hours under press; then it is turned. It is replaced under press for a few hours longer to ensure a good shape.

When sufficiently pressed, the cheese is removed to a cellar. Here it is soaked in weak brine, at 16° Beaumé, for one and a half days, then in somewhat stronger brine for one and a half days, and finally in a saturated brine for two days. It is now taken out of the brine, left for some days to dry, and then carried to a cheese room.

A white crust, consisting mainly of salt, forms on the outside of the cheese. This is scraped off, and the cheese is rubbed every day with a wet or dry cloth. After three or four weeks, the cheese is watered (that is, put for some hours into cold well water), then rubbed with a cloth. This removes part of the salt, takes away the crust of salt, and allows of quicker ripening of the outside of the cheese. The outside of the cheese during the ripening period turns yellow.

The whole ripening period extends over about five or six weeks. At the end of this time the cheese is sent to market.

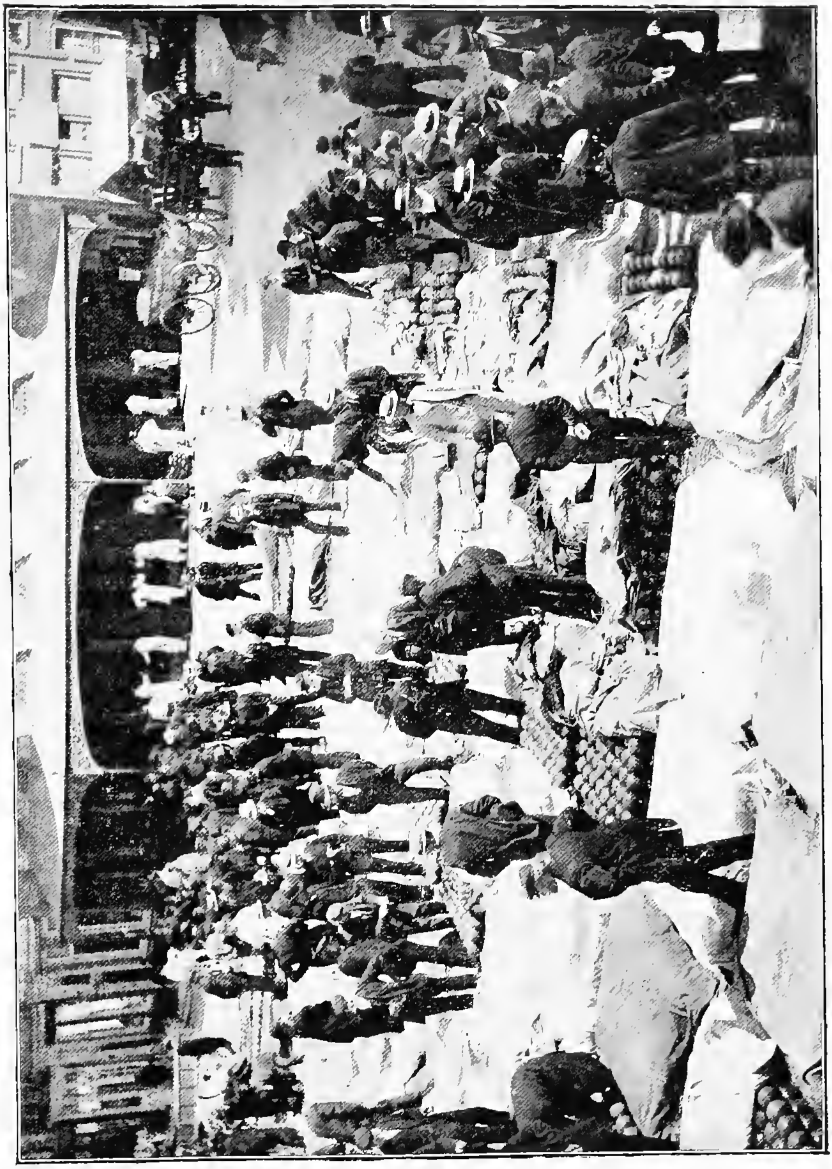
CHEESE MARKET AT ALKMAAR

This is the most important market for the sale of Edam cheese especially for that made in factories. Nearly, all Edam cheese is sold in the markets or fairs and as a rule when only two or three weeks old. They are brought to the market place on the Thursday evening or Friday morning and made up in smaller (for farmers cheese) or larger (for factory cheese) heaps. The sale commences at 10 a. m. sharp on the Friday morning. Edam cheese is made in three sizes, viz "kleine" weighing 2 kilo, "commissie" weighing 4 kilo and "middelbare" weighing 5 to 6 kilo. The "kleine" or small ones are sold first and afterwards the larger sizes. The merchants judge the cheese and when this is done the bargain is soon made. The prize is quoted per 50 kilos. In 1909 the following average prizes were realised for factory made Edam cheese:

January	49 sh.	4d.	per 50 kilo.
February, March and April	44 sh.	4d.	„ 50 „
May, June, July and August	44 sh.	1d.	„ 50 „
Sept., October and Nov.	48 sh.		

When a bargain is concluded, the lot is carried to the "Waag" or weighing house, by carriers who are appointed by the corporation. There are four groups of carriers, each wearing a differently coloured hat. Each group takes the cheese from a certain part of the market place and carries the cheese to the weighbridge indicated for his group. When the cheese is weighed by a sworn official, the carriers bring the cheese to the barges of those merchants living outside the town or to the warehouses. The producer must pay to the corporation a fee of one shilling per 50 kilos for carrying and weighing. The transactions are all strictly cash. The cheeses are cleansed and oiled with linseed oil before they are brought to the market.

In 1909 7792 tons of Edam cheese were sold at Alkmaar and on the 28th of May of that year the quantity sold was 172 tons.



Cheese Market at Alkmaar.

THE "POLDERS"

CALLED

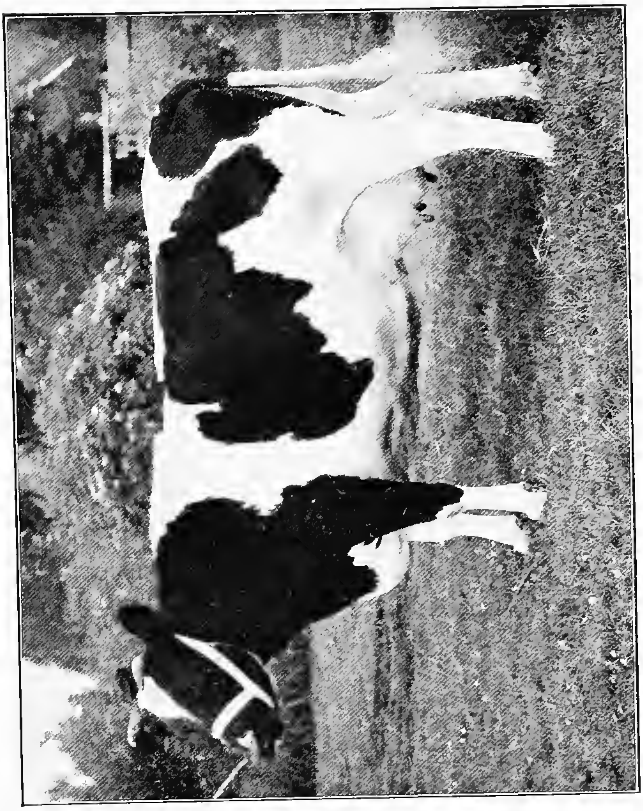
"DE SCHERMER" AND "DE BEEMSTER".

At the beginning of the 17th century there were between the towns Alkmaar and Purmerend, two lakes separated by a narrow strip of marshland. These lakes have been laid dry and so transferred into a large area of fertile clayland.

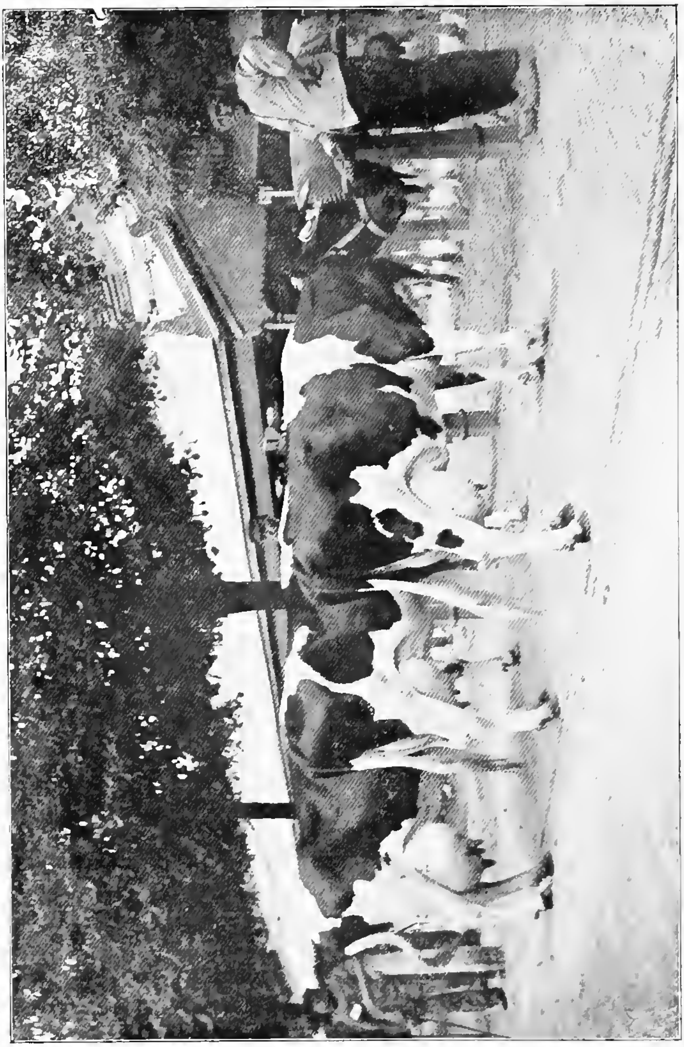
The tram leads over the "ringvaart" (circle canal) of the polder "de Schermer", which was laid dry in 1632 and has an acreage of 10976 acres; the level is about 13 feet below the average level of the Zuiderzee. This level is maintained by means of 50 windmills and is kept in winter 6 inches lower than in summer. 14 of these windmills are used to bring the water into the lower canals and the other 36 to bring it gradually higher up from one level to the other, till it is high enough to flow off into the Zuiderzee. On the spot where you will visit the mills, two mills pump the water on to the first higher level called "kolk", and from there it is pumped by two other mills into the circle canal.

The costs of keeping up this polder are 5 sh. 5 pence per acre. The land is divided in plots of about 26 acres and each farm has as a rule two of such plots or in total 52 acres, having a selling value of from 62 to 68 pounds per acre and a rental value of about 8 guineas. Milch cows as well as breeding cattle are kept and many sheep for fattening. After having passed the small strip of moorland (market gardening in done here) the tram goes over the dyke of the second lake and after some time descends into the polder "Beemster" which was laid dry in 1612 and has an acreage of 17290 acres.

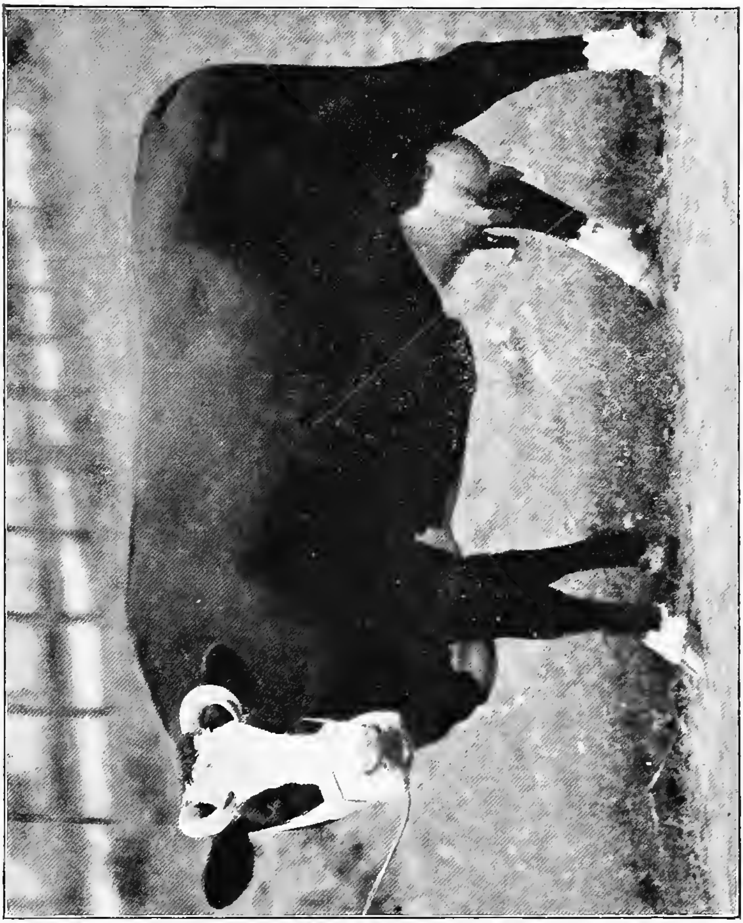
For this "polder" steammills are used in stead of windmills. This land is of excellent quality, is very suitable for cattle keeping and cattle breeding in every sense, also some market gardening is found here. The land is divided in plots of 42 acres and each farm has from 42—66 acres. The farm of Mr. Zeeman has 66 acres and he keeps 18—20 milch cows), four heifers, 7 to 8 calves, 14 to 15 store cattle, 130 sheep and 2 horses. The wellwater on the place contains marsh-gas which is used for lighting and heating.



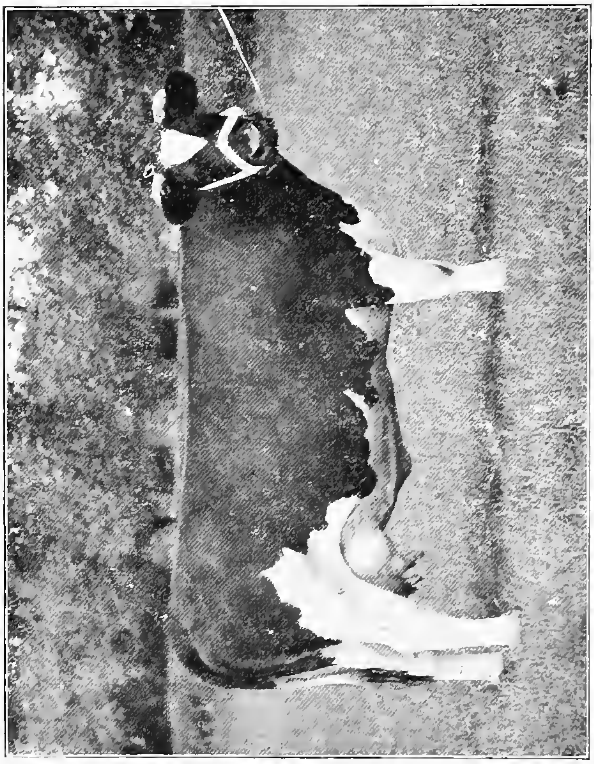
Netherland Herdbook Cow of the black and white breed.



Frisian Herdbook Cows.



Netherland Herdbook cow of the white faced Groningen breed.



Netherland Herdbook cow of the red and white Maas-Rhine-IJsel breed.

KINGDOM OF THE NETHERLANDS.

REGULATIONS

FOR

carrying into effect the provisions of the Act of the 17th June 1905 (Collection of Acts n°. 213) relating to "the use of controlmarks for butter from members of one of the butter-controlstations".

Decree of the 17th July 1912, containing regulations with which butter-controlstations must comply in order to be placed under Government supervision and further relating to the issue and withdrawal of marks, which are intended exclusively to be applied by or on behalf of the members of a butter-controlstation under Government supervision, on butter or on the packing of butter made or bought by them.

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WE, WILHELMINA, BY THE GRACE OF GOD, QUEEN OF THE NETHERLANDS, PRINCESS OF ORANGE-NASSAU, ETC., ETC., ETC.

On the proposal of Our Minister of Agriculture, Industry and Trade of the 7th May 1912, Directorate of Agriculture, n°. 5075, Division V.

Considering, that it is advisable, in connection with the execution of the act of the 17th June 1905 (Collection of Acts n°. 213), containing regulations regarding the marking of butter, coming from members of a butter-controlstation under Government supervision, to fix rules with which butter-controlstations must comply in order to be placed under Government supervision and further relating to the issue and withdrawal of marks, which are intended exclusively, to be applied by or on behalf of the members of a butter-controlstation under Government supervision, on butter or on the packing of butter made or bought by them;

Have approved and decree:

1. *General Regulations.*

Section 1.

In this decree

a. Minister means Minister of Agriculture, Industry and Trade;
b. Director-General means Director-General of Agriculture.

Section 2.

In order to be placed under Government supervision the butter-controlstations must comply with the conditions and the obligations laid down in this decree.

2. *About the butter-controlstations in general.*

Section 3.

The butter-controlstations or the bodies by which they are governed must be incorporated.

Section 4.

The stations must give to the officials, entrusted with the Government supervision such powers as are necessary for exercising the supervision of the stations.

Section 5.

The marks are issued to the stations, which are entitled to be placed under Government supervision, by or on behalf of the Director-General.

Section 6.

The costs of making and delivering the marks are born by the stations.

Section 7.

When the stations do not fulfill or not properly fulfill the obligations fixed by this decree, the marks can be withdrawn by the Director-General.

3. *About the articles of association of the stations.*

Section 8.

The articles of association of the stations and all amendments and additions are subject to the approval of Our Minister.

Section 9.

They must contain a provision that all members must comply with the prescriptions to be made by Our Minister after consultation with the Central Commission, meant in section 27.

4. *About the members of a station.*

Section 10.

The requirements, with which persons must comply to be admitted to a station, will be fixed by Our Minister, after consultation with the Central Commission.

Section 11.

A decision of a station to admit a person must be notified to the Central Commission within 72 hours after such decision is taken.

Section 12.

A decision, as meant in the foregoing section, can be annuled by the Central Commission within three weeks after it has been taken, in stating reasons for doing so.

Section 13.

A decision as meant in section 11, if not annuled within the period given in section 12, will come into force on the thirtiest day after it has been taken or as soon as the Central Commission has stated that there are no reasons for annulation.

Section 14.

The stations shall notify to the Director-General the names of the members.

Section 15.

When a member ceases to comply with the requirements meant in section 10, he will be struck out by the station.

Section 16.

The stations must notify to the Director-General and to the Central Commission the names of the persons who have resigned voluntary or who have been suspended or struck out, in the latter cases mentioning the reasons for doing so.

5. *About the boards, the directors and the principal chemists of the stations.*

Section 17.

The requirements with which the members of the boards, the directors and the principal chemists of the stations must comply, will be fixed by Our Minister after consultation with the Central Commission.

Section 18.

The stations must notify to the Director-General and to the Central Commission the nominations of the members of the board and of the directors.

Section 19.

The appointments of the principal chemists of the stations are subject to the approval of the Director-General.

6. *About the work of the stations.*

Section 20.

The destribution of the marks to the members is done by the station concerned.

Section 21.

When a member resigns voluntary or is suspended or struck out, the marks in his possession will be withdrawn by the station.

Section 22.

When the Central Commission considers it necessary to withdraw the marks which are in the possession of one of the members and the station is refusing or neglecting to do so, the marks will be withdrawn by or on behalf of the Director-General.

In urgent cases the marks, which are in the possession of one of the members, are directly withdrawn by or on behalf of the

Director-General, who gives immediate notice of the withdrawal to the Central Commission.

Section 23.

When a member does not comply with the prescriptions to be fixed by Our Minister, the station will impose a penalty to be fixed by Our Minister after consultation with the Central Commission.

Section 24.

The sampling and the analysis of butter is done in accordance with prescriptions to be fixed by the Director-General after consultation with the Central Commission.

Section 25.

All communications of the stations intended for publication are subject to the approval of the Director-General.

Section 26.

The stations must send each year before the 1st May, to the Director-General a full account of their working during the preceding calendar-year.

7. *About the Central Commission.*

Section 27.

There will be a Central Commission for the butter-control-stations, composed of one representative of each station and not more than five members to be appointed by Our Minister.

Section 28.

At the meetings of the Central Commission the members appointed by Our Minister have only an advisory vote.

Section 29.

All other matters relating to the Central Commission will be regulated by Our Minister.

Our Minister of Agriculture, Industry and Trade is charged with the execution of this Decree, which will be published in the collection of Acts and copy of which will be sent to the Council of State.

Het Loo, 17th July 1912.

WILHELMINA.

The Minister of Agriculture,
Industry and Trade,
A. S. TALMA.

Published 31 July 1912.

The Minister of Justice,
E. R. H. REGOUT.

it did a good deal of harm to the honest butter trade."[*]

Putting aside the difficulty of stopping any fraud by legislation alone, there is, in the case of butter, the additional difficulty of telling when it is pure and when it is not. An analyst can never say with absolute certainty that a butter is pure merely on the

strength

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[*] The Dutch Chamber of Commerce in LONDON has done an excellent work in keeping an eye on the operations of butter fakers.

strength of a chemical and physical analysis. A certificate of purity can only be given as Dr. VAN DYN said

THE HAGUE (S. HOLLAND), GRONINGEN (GRONINGEN), LEEUWARDEN FRIESLAND), and MIDDELBURG (ZEELAND)- is a qualified chemist as director, with a staff of analysts and one or more inspectors. The inspectors of the associations are on the road daily, paying unexpected visits to the dairies where butter is made or sold by persons in the Control or to places where butter made or sold by them is on sale. Wherever the inspectors go they take samples not only

of

of butter, but of the materials used in its manufacture Sometimes they are present when the butter sample is being made.

(4) That the moisture in the butter does not exceed 16 per cent.

An Ingenious Label. The Government Mark is a reproduction of the arms of the Netherlands,over which the words "Nederlandsche" (Netherland) and under which the word "Botercontrole" (Butter Control) and in smaller characters"Onder Rijkstoezicht" (under Government supervision

vision)are placed . This mark is printed in blue ink on thin, tough paper by the Government printer.

sizes for different weights of butter. It should be added that there is in force at all the Control stations a compulsory system of book-keeping in reference to the labels issued.

The History of a Firkin of Butter. Let us follow up an actual firkin of butter which on being opened is found to have impressed on its contents a label numbered E37222.

We

We find:

(1) E is the letter of a parcel of 38 kilos.

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realised, the adulterators have been beaten in the foreign market without any direct assault whatever.

It is an offence punishable, not by fine, but by imprisonment only to use the official butter guarantee improperly. In 1910 43.405 tons of butter were made under the Control.